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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Application of: Scott D. Lucas, et al. §
Serial No.: 09/317,409 §
Filed: May 24, 1999 §
For: **PRODUCTS AND METHOD OF** §
CORE CRUSH PREVENTION §

Group Art Unit: 1771
Examiner: J. Befumo
November 19, 2002

Commissioner for Patents
Washington, D.C. 20231

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APPEAL BRIEF

Appellants file this Appeal Brief in support of Appellants' Notice of Appeal mailed on June 19, 2002, in response to the Examiner's final rejection of Claims 55 and 57-59 in the Office Action of December 19, 2001 (Paper No. 17).

Real Party in Interest

The real party in interest in this application is Cytec Technology Corporation, assignee of the entire right, title and interest to and in the application.

Related Appeals and Interferences

Appellants, Appellants' legal representative, and assignee are not aware of any other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

The above-referenced application contains Claims 1-12, 39-46, 55, 57-76 and 87. Claims 1-12, 39-46, 60-76 and 87 were withdrawn from consideration as being directed to non-elected inventions. Claims 55 and 57-59 have been finally rejected under 35 U.S.C. §112, first and second paragraphs. A copy of Claims 55 and 57-59 is attached hereto as Appendix A.

Summary of Invention

The instant invention is directed to a prepreg of honeycomb sandwich structure precursors. Specification at 8: 37-39, 9: 1-25. A major problem associated with honeycomb sandwich structures is the tendency of the honeycomb core to crush during the autoclave process in manufacture. Specification at 1: 20-22. Core crush is known to occur due to differential movement during the autoclave process between the prepreg plies that comprise the honeycomb sandwich structure. Specification at 1: 28-30. Known means for preventing core crush have focused on preventing the differential movement by either mechanical/physical means (e.g., using tie downs to keep the prepreg plies from differentially moving) or chemical means focusing on the resin system or on other parameters of the autoclave process. Specification at 1: 33-39, 2: 1-5. However, known means of reducing core crush, including those that employ mechanical/physical means may increase production costs due to increased labor costs. Specification at 2: 11-13.

The present invention is directed to stiffness treated honeycomb sandwich structure precursors that eliminate the need for the use of known mechanical/physical means or chemical means to prevent differential movement between prepreg plies during the autoclave process. The invention prepreg plies, which are stiffness treated to increase their frictional resistance, have constrained differential movement against other prepreg plies, a feature that reduces core crush caused by slippage during manufacture in a cost effective manner and thereby overcomes problems associated with known means for preventing the core crush. Specification at 12: 2-6.

Issues

The issues presented in this case are:

- I. Whether the Examiner erred by rejecting Claims 55 and 57-59 under 35 U.S.C. §112, first paragraph, as containing subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.
- II. Whether the Examiner erred by rejecting Claims 55 and 57-59 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Grouping of Claims

Claims 55 and 57-59 stand or fall together.

Argument

- I. **The subject matter of Claims 55 and 57-59 is fully supported in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention and therefore comply with 35 U.S.C. §112, first paragraph.**

The instant claims are directed to a prepreg of honeycomb sandwich structure precursors. As set forth above, the invention addresses the costly and time-consuming problem of having to use known mechanical/physical means, chemical means or other parameters of the autoclave process to prevent the differential movement of prepreg plies during the autoclave process in manufacture. Specification 2: 11-13. During prosecution, to distinguish over U.S. Patent No. 5,895,699 to Corbett ("Corbett") a reference that teaches a honeycomb prepreg structure using tie down plies to constrain differential movement, independent Claim 55 was amended *inter alia*, to include the feature, in the absence of a tie down ply contacting the honeycomb core. Amendment and Petition for Extension of Time dated October 22, 2001. Claim 55 and claims 57-59 depending therefrom were then rejected under 35 U.S.C. §112, first paragraph, as containing subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner contended that "[a]lthough the disclosure does not specifically teach using tie down plies with the present invention, no where in the disclosure does it teach that the invention is produced in the absence of tie down plies." (Paper No. 17). In other words, there is no literal support for the claim as amended. The Examiner then went on to cite Ex Parte Grasselli, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.*, 738 F.2d 453 (Fed. Cir. 1984), as authority for the blanket proposition that negative limitations recited in the claims, which did not appear in the specification as filed introduce new concepts and violate the description requirement of 35 USC §112. (Paper No. 17)

In response, Appellants argued that "literal support" is not the standard by which compliance with 35 USC §112, first paragraph should be measured. The subject matter of (an amended) claim need not be described literally or "*in haec verba*" in order for the

specification to satisfy the description requirement. In re Lukach, 442 F. 2d 967, 969, 169 USPQ 795 (CCPA 1971). See also Fields v. Conover, 443 F. 2d 1393, 1395, 178 USPQ 288, 289 (CCPA 1971); Sun Products Group Inc. v. B & E Sales Co. Inc., 700 F. Supp. 366, 9 USPQ 2d 2009 (E.D. Mich. 1988); Nelson v. Bowler, 1 USPQ 2d 2076, 2078 (Bd. Pat. App. & Int'f. 1986) ("It is not necessary that the claimed subject matter be described *in ipsius verbis* to satisfy the written description requirement of 35 USC 112."). It is sufficient that the specification "convey clearly to those skilled in the art, to whom it is addressed, in any way, the information that the applicant has invented the specific subject matter later claimed." (Emphasis added.) In re Wertheim, 541 F. 2d 257, 262, 191 USPQ 90, 97 (CCPA 1976) appeal after remand, 646 F. 2d 527, 209 USPQ 554 (CCPA 1981).

The Examiner acknowledges that while literal support is not required to satisfy the written description requirement, according to Ex Parte Grasselli, support for a negative limitation has a different standard (i.e., that the mere absence of a positive recitation is not a basis for its exclusion (Paper No. 21)). In Ex Parte Grasselli, the PTO Board held that the negative limitations recited in the claims, which did not appear in the specification as filed, introduced new concepts and violated the description requirement. Ex Parte Grasselli does not however, apply to all situations wherein there has been a negative limitation introduced into a claim, but rather to a specific situation wherein there is introduction of an express exclusion of certain elements not discussed at all in the original specification. In Ex Parte Parks, 30 USPQ2d 1234 (Bd Pat. App. & Inter. 1993), the Board reversed the Examiner's rejection of the use of a negative limitation in a claim that was not literally supported in the specification. In Parks, the Appellant had used the negative limitation "in the absence of a catalyst" even though there was no literal support for the negative limitation in the specification. The Board made its decision on the finding that there was no mention of a catalyst throughout the Parks specification, which would have seemed to cry out for a catalyst if one were used. Id. at 7. Therefore, the Board ultimately held that it could not be said that the originally-filed disclosure in Parks would not have conveyed to one having ordinary skill in the art the concept of effecting decomposition at an elevated temperature in the absence of a catalyst. Distinguishing Ex Parte Grasselli, the Board pointed out that under the particular facts of Grasselli, the negative limitation introduced new concepts in violation of §112, first paragraph. (Emphasis added) Id. at 6. No new concepts were found to have been introduced in Parks.

The present specification specifically identifies core crush as being a major problem in the manufacture of honeycomb sandwich structures. Specification at 1: 20-26. Further, the specification teaches "tie downs" as exemplary known "mechanical/physical" means for keeping prepreg plies from differentially moving during autoclave and thereby reducing the

core crush. Specification at 1: 33-38; 3: 24-29. The specification then goes on to fault known methods, (i.e., tie downs) of reducing core crush with increasing production costs and at times failing to provide satisfactory reduction of the problem. Specification at 2: 11-13; 3: 33-37.

Accordingly, the present invention provides as a solution to this problem, honeycomb sandwich structures that are stiffness treated to exhibit reduced core crush and that further, the invention prepreg plies, which are stiffness-treated have constrained differential movement against other prepreg plies. Specification at 11: 36-39; 12: 1-4. Since the present invention is intended to solve, *inter alia*, the problem of increased production costs associated with prior methods of preventing core crush, such as for example tie downs, the concept that the present stiffness treated prepreg plies are to be used instead of, (i.e. to the exclusion of) not in addition to, known methods is clearly present in the instant specification. (Therefore, failing to exclude tie down plies from the present invention would further increase, not decrease, production costs and therefore not only fail to overcome, but instead exacerbate the problems associated with the prior art.) Hence, like Parks, no new concepts were introduced by way of amendment to the claims in the instant application.

Moreover, in Parks, the negative limitation "in the absence of a catalyst" was found by the Board to have been supported by a specification that never once even mentioned a catalyst. There is no question that in the present specification, the concept of tie down plies as well as the disadvantages associated therewith have been discussed at length. Therefore, if no new concepts were found to have been introduced in Parks, then no new concepts could have been introduced by way of amendment to the present claim 55.

Given the foregoing and the fact that even the Examiner acknowledges that "the disclosure does not specifically teach using tie down plies with the present invention," one of skill in the art would therefore conclude that the present invention uses stiffened fabric components in prepreg plies and sandwich structures to eliminate the use of known "tie downs" to constrain differential movement and hence prevent core crush. The use of stiffened fabric instead of , not in addition to, tie down plies is, as set forth above, clearly conveyed by the present specification. Hence, the Examiner's conclusion that the negative limitation in amended claim 55 is not supported by the disclosure is unfounded. Claims 57-59 depend from claim 55.

Appellants respectfully submit that the Examiner's position is contrary to the present specification and the prevailing case law and therefore cannot be a proper basis for the rejection of the instant claims. The subject matter of Claims 55 and 57-59 is fully supported in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

Appellants respectfully request that the Honorable Board reverse the rejection of Claims 55 and 57-59 under 35 U.S.C. §112, first paragraph.

II. Claims 55 and 57-59 are definite and particularly point out and distinctly claim the subject matter, which Appellants regard as the invention and therefore comply with 35 U.S.C. §112, second paragraph.

In the Office Action dated December 19, 2001, claim 55 was rejected for being indefinite because the Examiner queried whether "a tie down ply is any type of material which mechanically or physically prevents the slippage of the prepreg layers in the honeycomb core lay-up. Or is a tie down ply a specific type of layer which prevents the prepreg layers from slipping during autoclave processing as suggested by the Corbett reference." (Paper 17). Appellants responded by citing Digital Biometrics Inc. v. Identix Inc., 47 U.S.P.Q.2D 1418, 1424 (Fed. Cir. 1998) (The written description is considered to determine if the patentee acted as his own lexicographer.... If not, the ordinary meaning, to one skilled in the art, of the claim language controls) and referring to the present specification wherein a tie down ply is not defined as, but rather given as an example of, a known mechanical or physical means to constrain differential movement of prepreg plies during autoclave processing. Specification at 3: 26-33. Hence, Appellants concluded, since a "tie down ply" is not defined in the present specification, a tie down ply would therefore be given the ordinary meaning to one skilled in the art (i.e., a specific type of layer that prevents the prepreg layers from slipping during autoclave processing as taught by Corbett). Request for Reconsideration dated June 19, 2002.

The Examiner nonetheless still maintains that the term "tie down ply" in claim 55 is indefinite. Specifically, the Examiner contends that "based upon the description of tie down plies in the specification ... and Applicants arguments regarding the art recognized definition of tie down plies ... Applicant's invention does require the use of tie down plies (i.e., a specific type of layer that prevents the prepreg layers from slipping during autoclave processing or a stiffness treated layer). Thus, the negative limitation "the absence of tie down plies" is contrary to the present invention." (Paper No. 21).

Although it is not entirely clear, it appears that the Examiner's current rejection is based upon somehow equating a tie down ply with the stiffness treated prepreg ply of the present invention. Nowhere do Corbett or Appellants ever define or for that matter even exemplify a tie down ply as being the stiffened ply of the present invention. Instead Corbett clearly defines a tie down ply as a specific layer that is "a narrow, peripheral strip that contacts the core ... along at least a portion of the chamfer... for about 1 inch overlap with the core... and

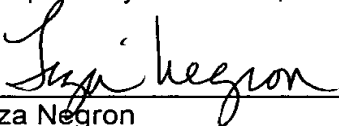
extends outward into the edgeband... beyond the trimline ... of the part". Corbett, col. 6, lines 4-8. "The tie down ply is cutaway everywhere in the body of the part other than a narrow peripheral area in the chamfer region, and forms a peripheral frame around the edge of the panel." Corbett, col. 6, lines 13-16. In absence of a definition to the contrary therein, a tie down ply should therefore be defined for purposes of the present specification in accordance with its ordinary meaning in the art (i.e., as the specific layer taught in Corbett (as opposed to any layer) for preventing prepreg layers from slipping during autoclave processing. Therefore, since the present invention uses stiffened prepreg plies instead of tie down plies, it excludes rather than requires the use of tie down plies as they are recognized in the art. The negative limitation "the absence of tie down plies" is not contrary to but instead completely consistent with the present invention.

Appellants respectfully submit that the Examiner's position is contrary to the evidence of record, the present specification and the prevailing case law. Claims 55 and 57-59 are definite and particularly point out and distinctly claim the subject matter, which Appellants regard as the invention. Appellants respectfully request that the Honorable Board reverse the rejection of Claims 55 and 57-59 under 35 U.S.C. §112, second paragraph.

Conclusion

With due respect to the Examiner, Appellants submit that the Examiner's rejections of Claims 55 and 57-59 under 35 U.S.C. §112, first and second paragraphs, have no sound basis in fact or reasoning and is contrary to the evidence of record and the prevailing case law. Appellants respectfully request that the rejections of instant Claims 55 and 57-59 under 35 U.S.C. §112, first and second paragraphs be overturned.

Respectfully submitted,



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Appendix A

CLAIMS

55. A prepreg of a honeycomb sandwich structure precursor including a honeycomb core, a stiffness-treated prepreg ply and a second prepreg ply, in the absence of a tie down ply contacting the honeycomb core, and where the stiffness-treated prepreg ply and the second prepreg ply are disposed adjacent one another, said stiffness-treated prepreg ply comprising:

a stiffness-treated fabric including a plurality of fibers and a polymeric material disposed on at least some of the fibers, where the stiffness-treated fabric exhibits an ASTM stiffness value greater than the ASTM stiffness value of an untreated fabric; and

a resin system,

the stiffness-treated prepreg ply, when disposed on the second prepreg ply comprising a resin system and a fabric selected from the group consisting of the stiffness-treated fabric and untreated fabrics, exhibiting a frictional resistance between the stiffness-treated prepreg ply and the second prepreg ply sufficiently greater than the frictional resistance between two untreated prepreg plies disposed on one another, where each of the two untreated prepreg plies comprises the resin system and an untreated fabric, so as to enhance resistance to core crush during fabrication of a honeycomb core structure from the honeycomb core structure precursor.

57. The prepreg according to claim 55, wherein the frictional resistance between the stiffness-treated prepreg ply and the second prepreg ply is between 50 pounds and 175 pounds as measured by the Boeing-Wilhelm method.

58. The prepreg according to claim 55, wherein the frictional resistance between the stiffness-treated prepreg ply and the second prepreg ply is between 75 pounds and 175 pounds as measured by the Boeing-Wilhelm method.

59. The prepreg according to claim 55, wherein the frictional resistance between the stiffness-treated prepreg ply and the second prepreg ply is between 100 pounds and 150 pounds as measured by the Boeing-Wilhelm method.